

AN ANALYSIS OF SOME CONSEQUENCES OF THE IMPLEMENTATION OF
RECENT CLEAN AIR ACT AMENDMENTS ON THE ECONOMY OF TEXAS

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The 1990s were characterized by significant economic expansion and population growth in Texas. The combined factors of cost advantages, an attractive climate, impressive transportation infrastructure, a plentiful workforce, outstanding higher education facilities, abundant natural resources, and a generally favorable tax environment have fueled substantial prosperity. During the past decade, Texas has effectively transitioned into a business complex dominated by technology, international trade, and other emerging global phenomena.

While there are many positive elements and opportunities associated with a growing economy, there are also notable challenges which must be addressed. One of the most important of these matters is the effort to balance the benefits of growth with the need to maintain overall environmental quality. Increasing business activity brings more motor vehicles, higher factory output, more construction, and related expansion patterns which can increase pollution.

Several years ago, The Perryman Group (TPG) conducted a comprehensive assessment of the costs and benefits of environmental protection to the Texas economy over the 1976-1995 period. This analysis concluded that, on balance, efforts to meet various legislative mandates have resulted in a modest net claim on resources (1.22% of output, 0.88% of income, and 0.50% of employment). Given the likely associated improvements in human health and the quality of life, the cost is minimal in the aggregate, although significant for particular sectors.

As rapid economic growth emerges contemporaneously with the much more stringent standards now incorporated in the Clean

Air Act, Texas finds itself again confronted with this issue. Irrespective of the scientific basis for the new regulations or their tangible benefits to human health, which are evidently the subject of some considerable debate, the practical reality must be addressed. The emission standards are likely to place all of the major population centers of the state (Dallas-Fort Worth, Houston, San Antonio, Austin, and El Paso) as well as several smaller urban regions on non-attainment status in the very near future.

This designation can have such detrimental punitive effects as (1) limiting the ability to permit and locate new production facilities in the relevant areas and (2) losing federal funding for major highway projects.

Given this situation, it is imperative that a viable solution be found. In a technical sense, these potential sanctions only apply to the designated urban areas. Given the integrated nature of the Texas economy and the dependence of rural and suburban regions on spinoff activity, however, all parts of the state would suffer from a lack of compliance. The present analysis makes use of the Texas Multi-Regional Impact Assessment System, developed and maintained by The Perryman Group, to illustrate these interrelationships. This large-scale, input-output system has been used in hundreds of applications over the past twenty years and offers an ideal mechanism to measure these linkages.

Overview

The areas vulnerable to non-attainment status under the Clean Air Act Amendments presently represent 69.5% of the state's population, 75.8% of aggregate employment, 81.9% of personal income, and 82.5% of gross product. Moreover, these urban centers have experienced the majority of the expansion observed in Texas over the 1990-1999 period. Specifically, 76.7% of the population, 79.4% of the employment, 88.0% of income, and 88.1% of output growth were concentrated in these regions.

A similar pattern is seen in the manufacturing sector, where the impacted areas represent 84.3% of total state activity and 87.3% of the increase since 1990. These urban areas have locational advantages, workforce availability, multi-modal transportation access, supplier and customer networks, amenities, international carriers, and other

factors which allow them to compete effectively for new and expanded facilities on a national or even global scale. It is highly unlikely that restricted locations of industrial plants in these areas would result in significant expansion in other parts of the state. The far more likely outcome is that site selections will occur in large urban centers in other states which offer the requisite set of resources. In this event, the spinoff benefits would also be largely lost.

The pattern in infrastructure funding is also comparable. Construction on projects of this nature is concentrated in the vulnerable urban areas both in terms of current levels (85.9%) and percentage of growth in the 1990s (93.4%). If major infrastructure initiatives suffer because of a lack of compliance with environmental standards, it is again improbable that substantial funds will be distributed to other segments of Texas. Federal dollars in this area tend to be allocated based on traffic counts, corridor locations and linkages, and similar criteria. Thus, any money not provided to enhance access in and between major urban centers of the state would likely flow to high-traffic regions and corridors elsewhere in the US. The importance of these large centers of business activity to the entirety of the state is presently illustrated.

Analysis of Spinoff Effects of Economic Activity in Non-Attainment Areas

As an initial illustration, TPG examined the impacts of five major industries which by the nature of their production processes are sensitive to environmental regulation. These sectors include chemicals; refining; stone, clay, and glass products; oil and gas extraction; and utilities. The vulnerable areas contain 85.1% of the current state output in these sectors and experienced 96.7% of the expansion observed in the 1990s. Using the Texas Multi-Regional Impact Assessment System, simulations were conducted to measure the effects of the development growth in the relevant regions on both (1) the state as a whole and (2) the potential non-attainment areas themselves. The differential between these results then provides a measure of the spillover benefits accruing to other parts of Texas.

The findings from this analysis reveal that about 22.0% of the indirect and induced activity from these sectors occur among suppliers and workers from the areas not immediately vulnerable to environmental constraints. These amounts

include (1) 43.1% of all output (\$10.6 billion), (2) 58.0% of all income (\$6.7 billion), and (3) 39.2% of the total employment (147,819 permanent jobs) growth in these areas over the course of the 1990s.

A second and analogous investigation was conducted using the total expansion in the potential non-attainment urban centers. Air quality issues can play a critical role in site selection even for firms in relatively "clean" industries. Concerns of this nature have already been noted for facilities in such sectors as computers and microelectronics. Using the approach previously described, TPG estimates that approximately 19.5% of the aggregate spinoff activity from manufacturing output growth in the relevant regions during the 1990s occurs in other parts of the state.

The results from this empirical exercise reveal that (1) 48.1% of the overall gains in output (\$11.7 billion), (2) 53.1% of the increases in income (\$6.1 billion), and (3) 40.8% of the rise in employment (153,771 permanent jobs) in the "spinoff" areas in the 1990s were a direct consequence of manufacturing expansion in the potential non-attainment areas.

When these two illustrations are joined (with adjustments for the overlapping industries), it reveals that the combined benefits of manufacturing and other environmentally-sensitive sectors in the vulnerable areas brought gains to the remainder of Texas in the 1990s totaling (1) \$17.3 billion in gross output (71.1% of the aggregate increase during the period), (2) \$9.9 billion in income (86.0% of the total), and (3) 241,278 permanent jobs (64.0% of the total). Thus, it is readily apparent that the economic well-being of the entire state is inextricably linked with ongoing expansion of core activity in the potential non-attainment areas.

Synopsis

This report has briefly illustrated the interdependence of various areas of Texas using a comprehensive modeling approach. The results demonstrate the importance of finding an effective balance between economic expansion and environmental compliance. This process involves a complex set of issues which must be fairly and equitably addressed. As an example, the recent electrical deregulation bill (Senate Bill 7) passed in Texas included emission standards

for power generators that are among the strictest in the country. Any additional reductions place the ongoing operations of numerous major facilities in jeopardy. The economic contribution of the most vulnerable of these facilities was recently estimated by TPG at (1) \$2.4 billion in annual gross product, (2) \$1.3 billion in annual personal income, and (3) 31,684 permanent jobs. These plants also support more than 80% of the lignite extraction in the state and are critical to the tax base and viability of several non-urban communities. Considerations of this nature must be included in the implementation of an effective compliance program.

In summary, the future of Texas requires a strong economy, a desirable environment, and enlightened regulatory policies. All parts of the state—urban, suburban, and rural—have a vital interest in the achievement of these aims. Such a strategy can only be accomplished through a cooperative approach in which all regions of the state recognize their role and stake in the compliance process.